IN SEARCH OF

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SOLUTIONS
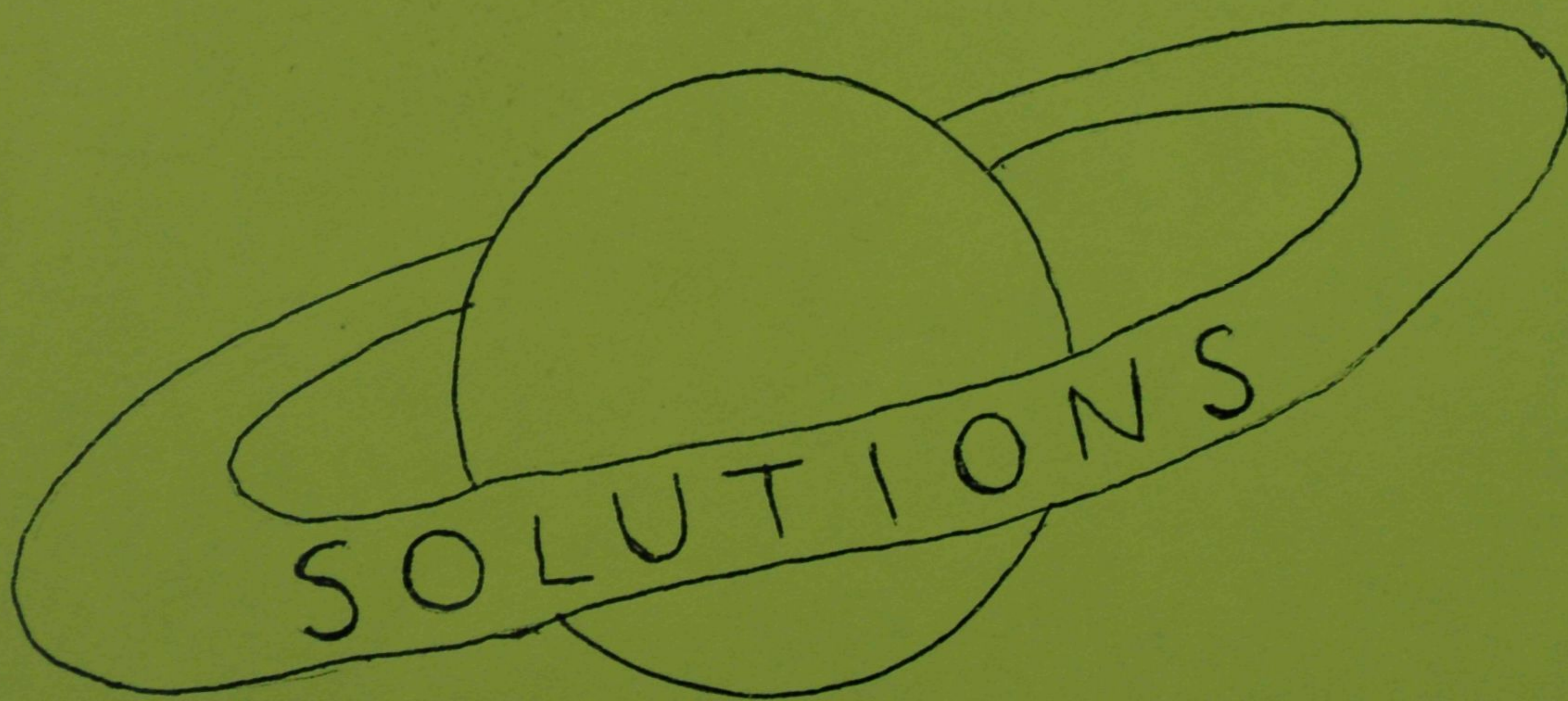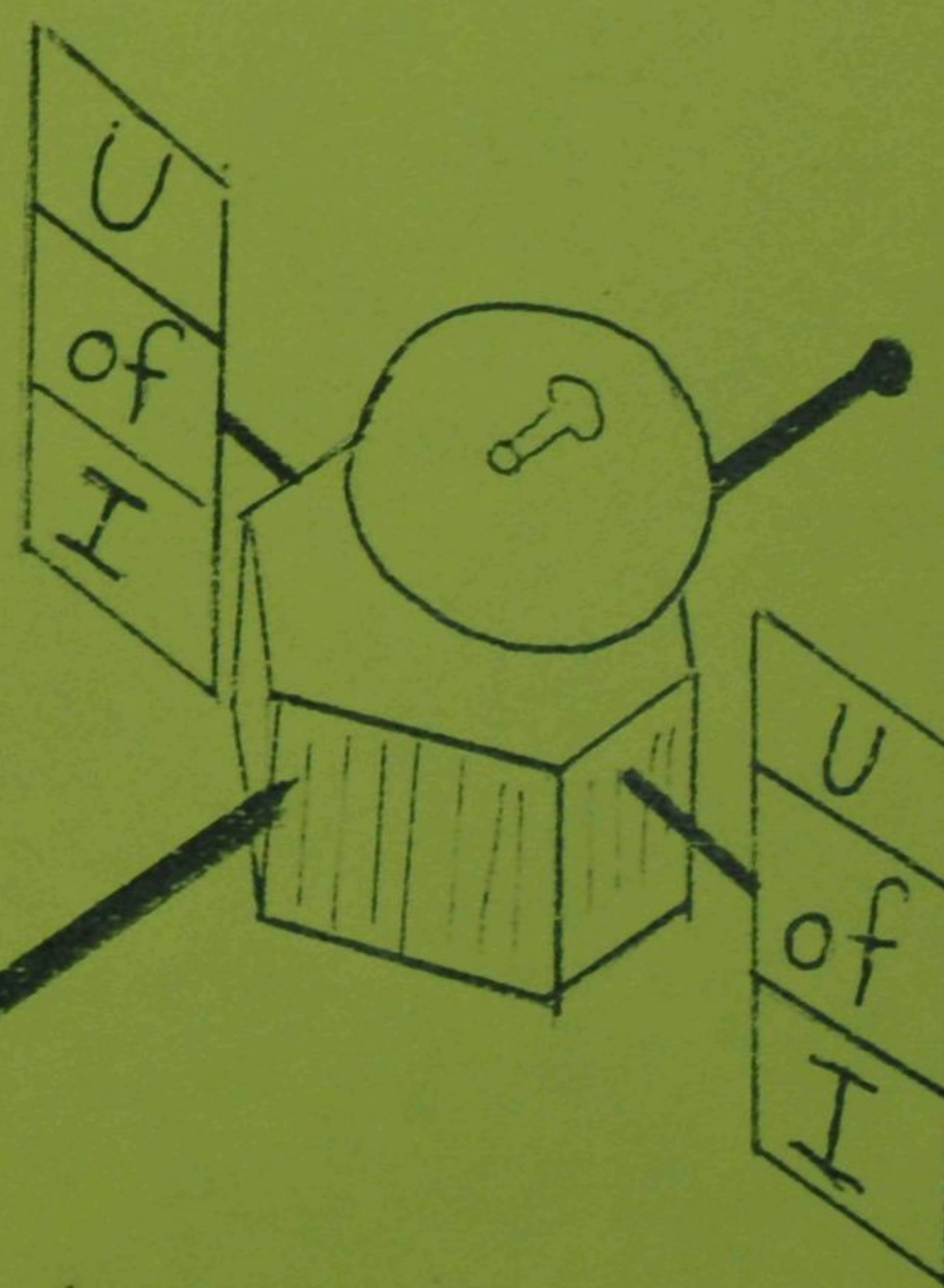
ELECTRICAL AND COMPUTER ENGINEERING OPEN HOUSE

MARCH 7 & 8, 1986

WELCOME

Welcome to the Department of Electrical and Computer Engineering. As you tour the building, feel free to stop any of the student volunteers wearing orange and blue shirts to ask them for any assistance you may need.

ELECTRICAL AND COMPUTER ENGINEERING OPEN HOUSE CHAIRPEOPLE

Jackie Michalek, Mark Svancarek, and Bob Tucker

FACULTY ADVISOR

Professor P. E. Weston

ABOUT OUR LOGO

Our logo was designed by Carol Parren to reflect this year's Engineering Open House (EOH) theme "In Search of Solutions." Advancements in Electrical and Computer technology have led to a search for solutions not only on earth, but in other parts of our galaxy.

THE SLIDE SHOW

As an introduction to our department, there will be a slide show every hour on the hour in Room 165.

THE LAB TOUR

In order to introduce the public to some of the laboratories in the department, we are offering a lab tour every hour immediately following the slide show. The tour leaves from outside of Room 165 at approximately 15 minutes after the hour.

IN LOOMIS LAB

Our Central Exhibit in the Loomis Lab corridor traces the development of the transistor.

PROJECT LOCATIONS

Basement	Room
"Holography and Laser Optics" by Eta Kappa Nu Honor Society	50H
PLATO Music	57

First Floor	
"Computer Speech" by Institute of Electrical and Electronics Engineers	151
Zenith Corporation	161
Bioengineering Open House	167-170

Second Floor	
"The AMSIE Robot" by the Association of Minority Students in Engineering	238
"Table High Robot" by Brian Vaceluke	241
"Modern Communication Techniques" by Synton Amateur Radio Club	245
"Calculator Simulation" by Triangle Engineering Fraternity	257
"Freshmen in Engineering" by Engineering Freshmen Council	260
"Programmable Sign" by Leroy Meyers	268, 270
"Robot Arm" by Sami Zein	268, 270
"Flight Simulation" by Bob Atec	268, 270

WITH SPECIAL THANKS

Mark Svancarek and Bob Tucker for the many hours that they spent organizing and preparing our Central Exhibit.

Bruce Thomas and Eric Hauk for making a time line of transistor development for our Central Exhibit.

Rick Harton for his photography work to be seen in our slide show, poster work, and transistor literature and models.

Carol Parren for designing our logo and obtaining Central Exhibit material.

Jeff Baich for his transistor circuit construction.

Doug Bottom, Sue Fukayama, Rich Lai, Hilda Tsai, and Dave Weiss for making exhibit posters.

Mike Fitzsimmons for supplying transistors.

Jack Jacobsen for supplying equipment for our Central Exhibit.

EE Woodshop for building our Central Exhibit display panels.

The Publications Office for printing signs, letters, and programs.

The secretaries throughout the EE Building for providing many supplies and typing.

Professor Weston for his guidance and help in organizing our Open House.

John Bardeen for his vast supply of information and cooperation on our Central Exhibit. It was he who took part in the invention of the transistor which has so immensely affected all of our lives.

<center>ELECTRONIC CIRCUIT BASICS</center>

-- Two quantities are of interest in an electronic circuit: voltage and current.

-- Voltage is a measure of the tendency for charge carriers (electrons) to want
   to move from one place to another in a circuit. The larger the voltage, the
   more they want to move. Voltage is a relative quantity, like distance. You
   can't measure the distance at a point, but you can measure the distance from
   one point to another. In the same way, the voltage at some point in the circuit
   is undefined unless it is referenced to some other point in the circuit Vol-
   tage is measured in volts.

-- Current is a measure of the flow of charge (electrons) through a wire or device.
   current is measured in amperes.

-- A Diagram is a representation on paper of an electrical circuit showing wire
   connections and devices

Example Diagram of Circuit
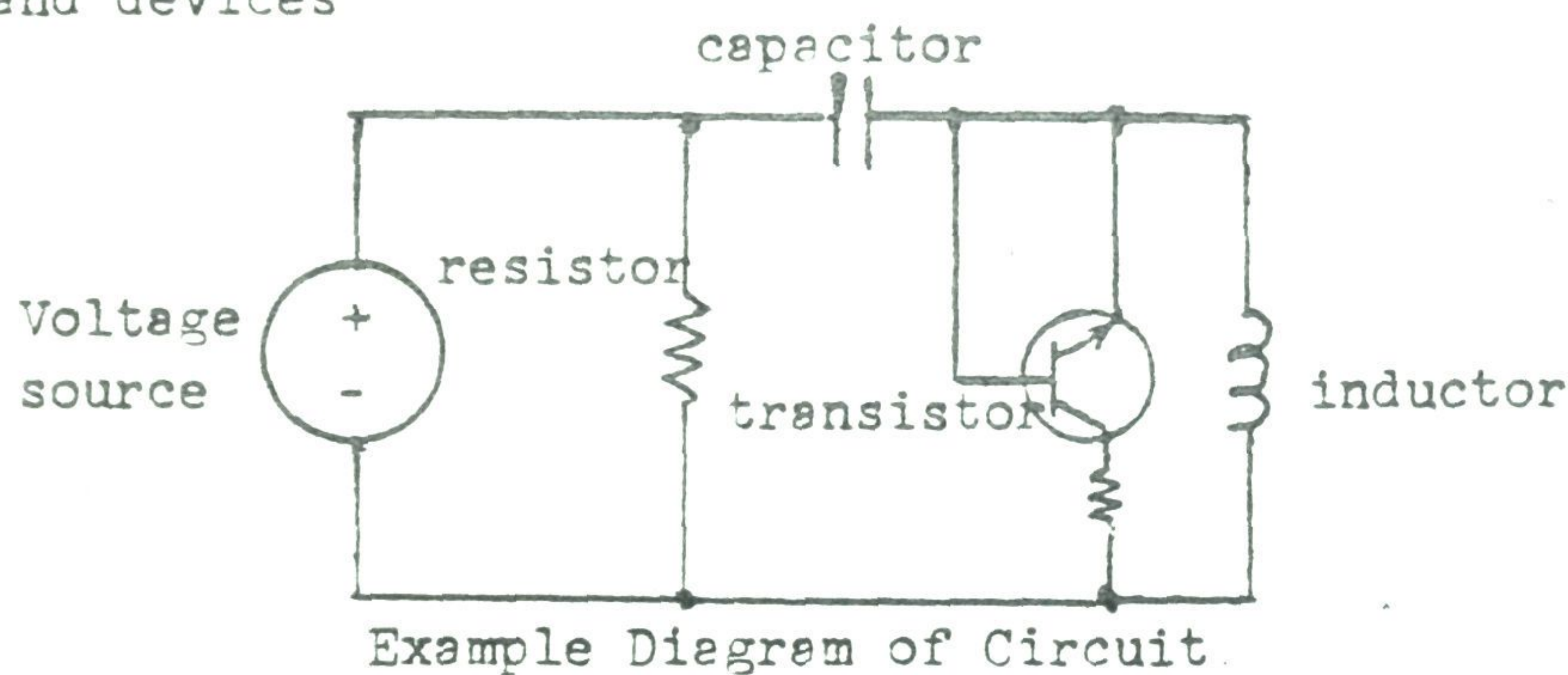
    -- A Node is a wire connection of more than one branch.

    -- A Branch is a single-file line of devices.

-- Devices have the ability to alter voltage and current, Wires do not have that
   ability.

-- Facts: The voltage on a node does not change along the node, meaning the voltage
   anywhere on a node is constant at a given time. This fact arises from the
   fact that nodes are wire connections, and metal wire cannot sustain a voltage
   difference.
        The current through any branch is also constant at a given time. This
   arises from the fact that charge cannot be distroyed· any charge which enters
   a branch must be offset by charge leaving that branch in an equal amount.

-- Different circuits have different functions: some direct electrical signals to
   one place or another. some generate signals, others modify singnals. some
   generate power. some transmit power, some preform mathematics. and others
   control machines or other circuits

GLOSSARY

analog -adj.- Pertaining to electronic circuits or signals which operate over a continuous range of voltage levels. Signals of this type directly represent some real world phenomenon: eg. sound waves.

connected speech -adj.- Refers to a speech recognition unit which can identify words as they are normally spoken; a continuous flow of words.

digital -adj.- Pertaining to electronic circuits or signals which operate at only two voltage levels. Signals of this type are usually coded analog signals, or purely numerical data.

phoneme -n.- The most basic word sounds. The English language contains about 50 phonemes. Example: the sound of the letter 'F' in the word 'FOR'.

signal -n.- A time-varying voltage or current present on a wire, line, or cable; usually carrying some information in its fluctuations.

speaker dependent -adj.- Refers to a speech recognition unit which can identify spoken text from a single person according to his or her personal dialect.

speaker independent -adj.- Refers to a speech recognition unit which can identify spoken text from all who speak to it.

speech recognition -vb.- An identification process in which the recognition unit compares human speech patterns with stored patterns in an attempt to understand the spoken message.

speech synthesis -vb.- A process by which numerical codes are converted into audible speech via an electronic model of human speech. Current synthesisers are capable of controlling inflections, pitch, and volume.

text-to-speech converter -n.- A software program designed to take input in the form of letters or phonemes and 'decide' which characters are silent, which produce sound, and what type of sound according to pronunciation rules, and context clues.

unconnected speech -adj.- Refers to a speech recognition unit which can identify only single words preceeded and followed by a pause. Sometimes called discrete-utterance recognition.